**NASA Advisory Council (NAC)**
**Aeronautics Committee**

**April 23, 2010**
**Langley Research Center, Hampton, Virginia**
**Building 1219, Room 225**

# Meeting Minutes

## Participants:

| First | Last | Organization | Role |
|---|---|---|---|
| Marion | Blakey | AIA | Chair |
| Ilan | Kroo | Stanford U. | Member |
| Preston | Henne | Gulfstream | Member |
| Mark | Lewis | U. of MD | Member |
| John | Hansman | MIT | Member |
| Paul | Adams | Pratt & Whitney | Member |
| Jaiwon | Shin | NASA | ARMD AA |
| Susan | Minor | NASA | Executive Sec. |
| John | Cavolowsky | NASA | Presenter |
| Douglas A. | Rohn | NASA | Presenter |
| Steve | Jurczyk | NASA | Presenter |
| Vicki | Crisp | NASA | Presenter |
| Mike | George | NASA | Presenter |
| Tim | Marshall | NASA | Observer |
| Michael | Hetle | NASA | Observer |
| Jean | Wolfe | NASA | Observer |
| Jim | Burley | NASA | Observer |
| Kathy | Barnstorff | NASA | Observer |
| David | Eames | Rolls-Royce | Observer |
| | | | |

**April 23rd:**

*The meeting was called to order at 8:04 a.m.*

**Welcome, Introductions and Opening Remarks** (*Marion Blakey, Susan Minor)*

After introductory meeting logistics from Susan Minor, Marion Blakey welcomed the members and went over the agenda for the meeting. She also discussed the dates for the next meeting in July and it was decided to move the dates to later in the month for the meeting at Glenn Research Center.

**Langley Center Director Briefing** *(Dr. Steve Jurcyzk, Vicki Crisp)*

Dr. Jurcyzk gave the members a brief overview of the history and contributions of Langley Research Center. Specifically, he went over the work that Langley does to support each mission directorate at NASA and the facilities available to support the needs of the Agency and missions. Dr. Jurcyzk pointed out that the biggest near term challenge facing the center is funding for the large wind tunnel facilities. Vicki Crisp then went into a more detailed description of the Aeronautics works that occurs at Langley in supporting the Aviation Safety, Fundamental Aeronautics, and Integrated Systems Research Programs. Dr. Jurcyzk said that the Exploration Systems Mission Directorate also benefited from the work done in support of Aeronautics, such as the translation of aero loads into the real world environment. Ms. Blakey asked about Langley's approach to working with commercial providers. Dr. Jurcyzk said that they work directly with the commercial providers through Space Act Agreements, and strive to collaborate in an equitable manner with everyone.

**Aeronautics Test Program Briefing** *(Mr. Mike George)*

Mr. Mike George gave an overview briefing of the Aeronautics Test Program (ATP), covering the assets, status of recovery act projects, the ATP strategic plan, and strategic alliances with other federal government agencies through the National Partnership for Aeronautical Testing (NPAT). Mr. George also covered the current status of the facilities, including usage and budget coverage. An area of particular concern has been the decreasing usage hours of the ATP facilities. In response to a question from Mr. Adams, Mr. George indicated that this decreased usage was due to a number of factors including an increasing usage of computational fluid dynamics (CFD), using overseas facilities, and the decreasing number of programs within the customer portfolios (both internal and external to NASA). Mr. Adams stated that it would be a good idea to benchmark the capabilities of competitors (such as overseas facilities) versus customer needs. Mr. George related that through facility users meetings they are getting feedback on customer needs and focusing on improving performance related to customer satisfaction.

Further committee discussion focused on the need for both ATP and NASA to participate in a national strategic discussion of facilities and usage. Mr. George

reported that an updated analysis of facilities had been performed by the RAND corporation, and that report was in the review cycle at the Office of Science and Technology Policy and would soon be released to Congress. He indicated that in that report, all of the ATP facilities with the exception of one were considered strategically important. Mr. Henne asked about the new focus of the present administration on research and technology (through the Office of Chief Technologist) and how that would affect the facility usage. Dr. Shin said that this was still to be determined, as well as what role the new Mission Support Directorate would play in infrastructure management. The committee members agreed that this was an important topic to bring forward to the full NAC, and that it should be framed as an Agency issue rather than specifically an Aeronautics issue.

**Unmanned Aircraft Systems (UAS) Research Planning**: (*Dr. John Cavolowsky)*

Dr. John Cavolowsky presented an overview of the current planning for the new UAS project, which would start in FY 2011. The committee members discussed the current interaction between NASA, the FAA, and the DoD on UAS research. Dr. Cavolowsky stated that the interaction between the FAA and NASA occurs through the Executive Committee (ExCom). Ms. Blakey asked about the JPDO's involvement. Dr. Cavolowsky said that the JPDO stood down their independent effort and now works through the ExCom. Mr. Paul Adams brought up the question of national policy concerning UAS. He feels that the country that opens up its airspace first to UAS will get a tremendous boost on the industry side. Mr. Henne as if there was any ICAO activity on developing national standards. Dr. Cavolowsky stated that the international community has been looking at spectrum issues. Dr. Kroo informed the group that there is an ICAO UAS study group who has been looking at a range of vehicle sizes and air traffic management issues. The radio community is having a meeting in 2012 to discuss spectrum allocation for UAS.

Dr. Hansman stated that the NASA approach is on target in working to simulate performance at different levels in different situations with regards to UAS. He also said that NASA should avoid presuming a solution (such as automation). Mr. Adams said that another approach to certification and operability is to look at probability versus regime to get at what types of systems are needed. He brought up the Sport Utility Vehicle as an automotive example of a requirement for a different safety standard. He felt that NASA was not engaging the right people at FAA to help inform NASA of decisions needed in this regard.

Mr. Henne felt the one major issue for UAS is how to handle separation assurance and conflict avoidance. The other technical barriers were more architecture and design issues, and compliance. He felt that clear policy principles need to be established regarding UAS operation versus manned vehicles operating in the airspace and who has priority when. Dr. Hansman said that one overriding principle is that people (on the ground or in the air) cannot be put at risk. Mr. Adams said that defining acceptable levels of operation will enable the technology on how to solve these problems. Dr.

Hansman stated that there is research needed to address the basic policy issues. Dr. Shin said that NASA is trying to address community issues, but has a very modest level of funding devoted to UAS. As of now, NASA is the only R&D organization doing research on some of these barriers related to UAS. He informed the members that Congress will review NASA's initial investments in this area, and will consider further funding after that. Dr. Kroo felt that one approach might be to focus on a subset of a big set of possibilities related to all the different classes of UAS vehicles. Dr. Cavolowsky said that part of NASA's strategy is to involve experts to help determine/verify the subset of possibilities that NASA should attack.

**Verification and Validation Research Planning** *(Mr. Doug Rohn)*

Mr. Doug Rohn presented an overview of current planning to stand up a project within the Aviation Safety Program focused on verification and validation of flight critical systems. In response to a question from Dr. Hansman, Mr. Rohn stated that the focus of the research is on the broad system level. Dr. Hansman felt that looking at verification of the code is only part of the issue. Another issue is how to verify that the requirements are sufficiently designed and within scope. Mr. Henne stated that the requirements process is a huge part of the process and that verification timelines to change a single constant in a table can take up to six months before implemented operationally. Dr. Hansman felt that scoping the research was an important part of the problem and didn't have a clear picture how this research was doing that. Mr. Adams wanted clarification on the issue of scope versus defining narrowing down the approach to a definite end game (or presenting "test cases"). After committee discussion, the members agreed that more information concerning the approach ARMD was taking on this project was needed to supply substantive advice. Mr. Rohn agreed to present additional information at the next committee meeting in July.

**Closing Remarks** *(Marion Blakey)*

Ms. Blakey thanked everyone for their contributions to the meeting and thought that the discussions and presentations were very helpful to the committee.

*The public meeting was adjourned April 23rd, at 1 p.m.*

**Actions**

- None